

5.12 FLOODPLAINS

5.12.1 Background

Floodplains are a valuable resource serving many functions including storm water storage, erosion and sediment control, and wildlife habitat. Floodplains are defined in *Executive Order 11988, Floodplain Management* as “the lowland and relatively flat areas adjoining inland and coastal waters, including flood prone areas of offshore islands, including at a minimum, that area subject to a one-percent or greater chance of flooding in any given year;” i.e. the area that would be inundated by the 100-year flood¹. The Indiana Department of Natural Resources (IDNR) notes that the floodplain includes both the floodway and floodway fringe².

FAA Order 5050.4A stresses that impacts to floodplains due to development are to be avoided and minimized by all means practicable. The order also outlines the options to be considered if encroachment into a floodplain cannot be avoided. These options include: consideration of Proposed Action and alternatives, mitigation measures (e.g. raising building elevations and minimal fill requirements), determination of a significant encroachment, and the determination of location in a special flood hazard area.

Construction within the floodplain is regulated by Federal and state agencies under Federal *Executive Order 11988*, the *National Flood Insurance Program* (NFIP), the *Indiana Flood Control Act*³, and the *Indiana Floodplain Management Act*⁴. The NFIP was created in 1968 as collaborative effort between the Federal and local government to alleviate some of the problems associated with flooding. The IDNR, Division of Water serves as the administrator for NFIP in Indiana. In addition, the State Natural Resources Commission, which has authority over flood control activities in the State of Indiana, has given IDNR, Division of Water the authority to act on its behalf⁵.

As the floodplain areas within the study area fall within the limits of the City of Gary, Lake County does not have floodplain jurisdiction⁶. However, the Zoning Code for the City of Gary contains local floodplain management regulations⁷ for development within flood hazard areas. *Zoning Code 163.089* outlines the necessary requirements to obtain an Improvement Location Permit from the City Zoning Administrator. In addition, *Zoning Code 163.090* lists development standards to prevent increased

1 Federal Aviation Administration. Executive Order 5050.4A, Airport Environmental Handbook. 1985.

2 Peters, N. & Nance, A., Indiana Department of Natural Resources, Division of Water. Local Floodplain Administrator's Guide, 1999/2000.

3 Indiana Code (IC) 14-28-1.

4 Indiana Code (IC) 14-28-1.

5 Peters, N. & Nance, A., Indiana Department of Natural Resources, Division of Water. Local Floodplain Administrator's Guide, 1999/2000.

6 Brezik, Wally, Zoning Administrator, Lake County Planning Division, Phone conversation. September 30, 2002

7 City of Gary, Department of Planning and Development, Zoning Division. Gary Zoning Code No.'s 163.085 – 163.096, October 1997.

flood heights or velocities, while 163.091 provides structural/building standards for flood damage protection⁸.

5.12.2 Methodology

Existing information regarding floodplains and floodways will be reviewed to determine the potential for floodplain impacts. All references to FEMA and FEMA maps are dated since the Federal Emergency Management Agency (FEMA) functions have since been reorganized within the Department of Homeland Security, Mitigation Division.

5.12.3 Existing Conditions – 2000

FEMA zone designations for the study area are shown on **Exhibit 5.12-1**. Zone A2 is defined as “areas of 100-year flood; base flood elevations and flood hazard factors determined.” Zone B is defined as “areas between limits of the 100-year and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.” Zone C is defined as “areas of minimal flooding.” Base flood elevations for the study area range between 586- and 588-feet above sea level. Furthermore, Zone A2 is considered as Special Flood Hazard Zone.⁹

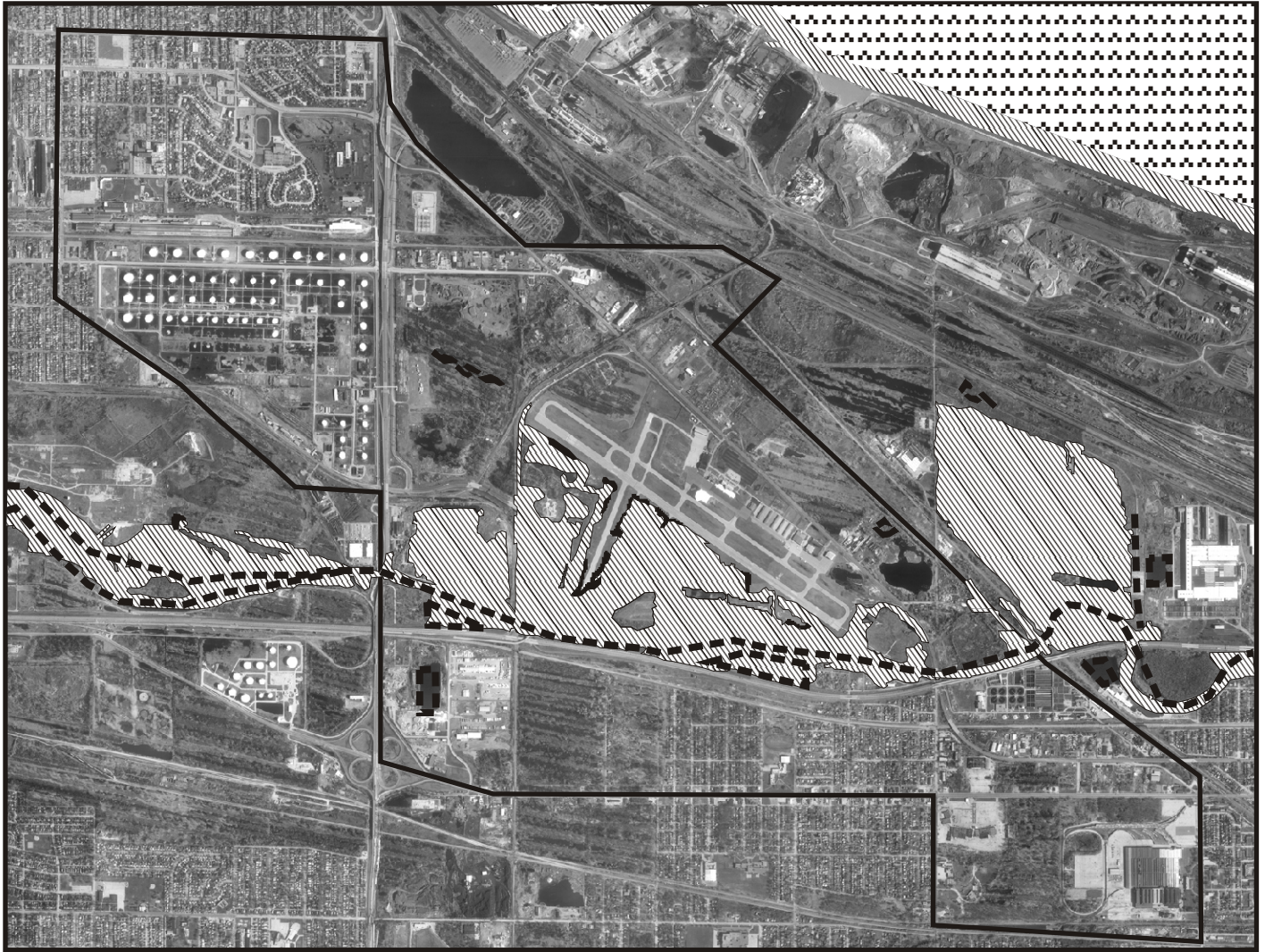
It should be noted that FEMA, in conjunction with IDNR and the U.S. Army Corps of Engineers, is currently updating the FEMA Maps for Lake County, Indiana. Maps for the entire county are being digitized, and some areas, including the Grand Calumet River Basin, are being revised using more modern hydrological modeling programs. It is expected that the base floodplain elevations will not change significantly, but that the sizes and/or locations of the floodplain areas will change. The anticipated date for the completion of the preliminary updated maps is September 2004; the anticipated date for the completion of the final updated maps is September 2005. As required by FEMA, the determination of floodplain impacts must be based on existing FEMA maps until official authorization of the completed revised maps is issued by FEMA¹⁰.

Based on the existing FEMA map, depicted in **Exhibit 5.12-1**, approximately 411 acres of 100-year floodplain (Zone A2) are located within the middle portion of the study area, encompassing the Grand Calumet River and extending north, with a width ranging between approximately 500 feet and 3,500 feet. The developed areas south of the river, the majority of the airport runways, and developed areas

⁸ City of Gary, Department of Planning and Development, Zoning Division. Gary Zoning Code No.'s 163.085 – 163.096, October 1997.

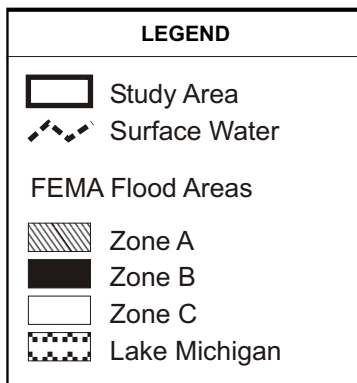
⁹ Federal Emergency Management Agency. *Flood Rate Insurance Rate Map*. City of Gary, Indiana. Lake County. Panel 18 of 19. March 16, 1981.

¹⁰ Federal Emergency Management Agency, Region V. Personal communication with Mary Jo Mullen. December 15, 2003.



Source: Base Map, Gary/Chicago Airport, 1999.

Floodplain Data, Federal Emergency Management Agency, National Flood Insurance Program, 1993.



North



Not to Scale



EXHIBIT 5.12-1 FEMA Map

April 8, 2004

north of the airport runways are generally within areas of minimal flooding (Zone C). Approximately 5 acres of 500-year floodplain (Zone B) exist as narrow regions (i.e. average of 100-feet wide) between the 100-year floodplain and areas of minimal flooding. Isolated areas of minimal flooding exist within the limits of the 100-year floodplain due to their higher elevations.

IDNR defines the floodplain as including both the floodway and floodway fringe¹¹. FEMA defines the floodway as “an area that includes the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water-surface elevation by more than a designated height” (i.e. the portion of the floodplain in which the water will be moving downstream during the 100-year flood event)¹².

Since the floodway and floodway fringe are not delineated on the FEMA Map for the study area, any proposed work in the floodplain would require a floodplain analysis from the IDNR, Division of Water to make a floodway determination (see **Exhibit 5.12-2** – Floodplain Permit Procedure Flowchart). If construction is to occur within the floodway, the applicant must obtain a Construction in a Floodway Permit from the IDNR. After the IDNR permit is issued, any requisite local permits are issued, and the local inspector checks that all Federal, state, and local requirements have been met, the local inspector will issue a Certificate of Occupancy. If construction is to occur within the floodway fringe but outside of the floodway, no permit is needed from the IDNR, but all local requirements must be met in order to obtain the Certificate of Occupancy^{13,14}.

5.12.4 Future Conditions – 2007

This section addresses the effects of future conditions on existing floodplains within the study area based upon three alternatives.

5.12.4.1 No Action

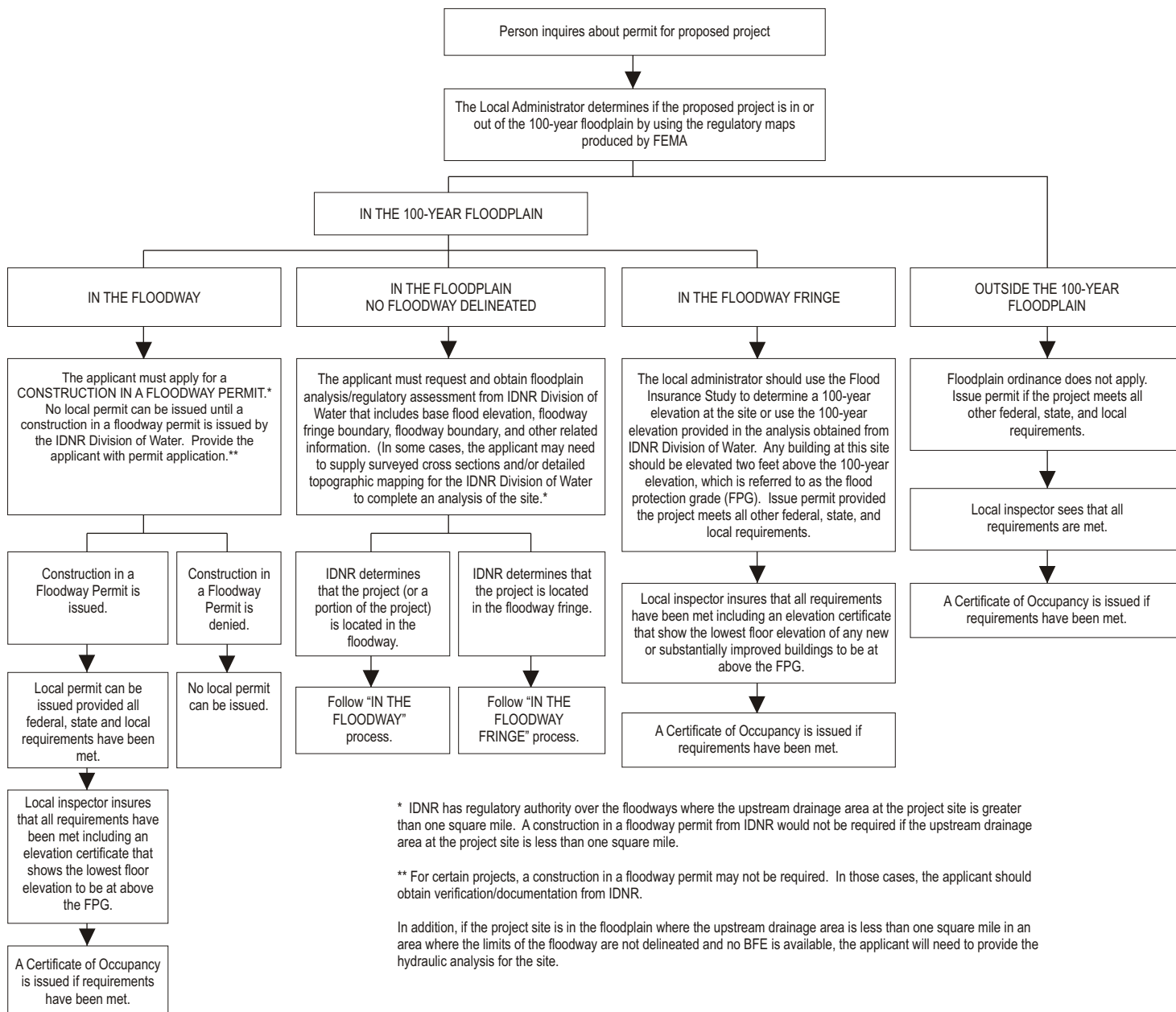
The floodplains within the study area would not be directly or indirectly impacted under the no action alternative, as no construction would occur. This alternative would not increase the risk of human hazards or property damage from floodwaters.

¹¹ Peters, N. & Nance, A., Indiana Department of Natural Resources, Division of Water. Local Floodplain Administrator's Guide, 1999/2000.

¹² Federal Emergency Management Agency. *National Flood Insurance Map*. 1993.

¹³ Peters, N. & Nance, A., Indiana Department of Natural Resources, Division of Water. Local Floodplain Administrator's Guide, 1999/2000.

¹⁴ Indiana Department of Natural Resources (IDNR) Division of Water. Personal communication with technical representatives. August 28, 2002 and September 4, 2002.



Source: Peters, N. & Nance, A., IDNR, Division of Water.
Local Floodplain Administrator's Guide, 1999/2000.



EXHIBIT 5.12-2 Floodplain Permit Procedure Flowchart

April 8, 2004

5.12.4.2 Improvements to Existing Runway 12-30 to Conform to Current FAA Standards

Implementation of the Proposed Action would require site preparation, grading and construction associated with the proposed improvements. The runway improvements project does not appear to require construction in a floodplain; however, the floodway area may require further investigation once design details are available, if it is determined to be in the floodplain.

Two improvements, the relocation of Runway 12-30 nav aids and acquiring 20 acres of land southeast of the Gary/Chicago International Airport, will occur in the vicinity of the floodplains. Therefore, it is possible that depending upon the final design for these improvements (i.e. the location of the nav aids or the razing of a home in the acquired 20 acres that is within a floodplain zone), implementation may directly alter existing floodplains.

It should be noted that acquisition of 20 acres of land southeast of the Gary/Chicago International Airport is likely to include the razing of buildings and the transformation of the area to open space. If carried out, these actions will have a positive indirect effect on floodplains in the area: The amount of impervious areas will decrease and open vegetated areas will increase, thereby providing additional areas that absorb stormwater runoff from surrounding impervious areas.

5.12.4.3 Improvements to Provide Additional Runway Length on Runway 12-30

Implementation of the Proposed Action would require site preparation, grading and construction associated with the proposed improvements. The runway improvements project does not appear to require construction in a floodplain.

5.12.4.4 Expansion of Existing Terminal

The proposed expansion of the existing terminal is not expected to impact floodplains, as this would not involve construction in a floodplain.

5.12.4.5 Acquisition and/or Reservation of Sites for Future Passenger Terminal and Air Cargo Facilities

Future aviation-related development is proposed in two areas in the Asphalt Wetland adjacent to the proposed runway improvements under the improvements to existing Runway 12-30 to conform to current FAA standards and improvements to provide additional runway length on Runway 12-30 alternatives. Preserving these sites is not expected to impact floodplains, as no construction would occur within a floodplain. The actual development of these areas would be defined as the need arises and will be subject to a separate environmental review at that time.

5.12.5 Summary of Findings

Only one small portion of the 100-year floodplain (Zone A2) is shown within a construction area northwest of Runway 12. However, upon visual inspection, it was determined that this area has been culverted and should no longer be considered as a floodplain area. The remainder of the 100-year floodplains and all of the 500-year floodplains (Zone B) are located to the south of the airport runways. Construction would primarily occur in the areas north and northwest of Runway 12. Thus, these improvements appear to avoid impacts to floodplains and Special Flood Hazard Areas in accordance with FAA Order 5050.4A.

The floodplains located in the area of the southeast RPZ will improve if the land is acquired and the buildings are razed. The open space will promote vegetation, which will decrease the amount of impervious areas, thereby providing additional areas that will absorb stormwater runoff.

5.12.6 Mitigation

During the design phase, INDR, Division of Water, will be contacted to determine whether the existing culverted condition of the small portion of the 100-year floodplain shown on the FEMA map within a construction area northwest of Runway 12 would preclude it as being determined as a floodplain. The project design will also clarify if the relocation of Runway 12-30 nav aids or acquisition of land southeast of the Gary/Chicago International Airport will require construction within existing floodplains.

If IDNR determines that the small portion would still be considered floodplain or the final design plans for either of the two aforementioned improvements require construction within existing floodplains, then the proposed project will be directly impacting floodplain areas. Since the floodway and floodway fringe are not defined on the current FEMA Map for the study area, the Gary/Chicago International Airport would request a floodplain analysis from the IDNR, Division of Water, and follow any necessary, subsequent steps as outlined under the "In The Floodplain, No Floodway Delineated" section of **Exhibit 5.12-2** and further detailed in Section 5.12.2. Any floodplain permit applications submitted prior to the official authorization of the completed revised maps by FEMA will be based on the most recent FEMA Map for the study area, which was used in this EIS¹⁵.

If IDNR determines that the small portion of the 100-year floodplain shown on the FEMA map within a construction area to the northwest of Runway 12 is no longer floodplain and the relocation of Runway 12-30 nav aids and acquiring land southeast of the Gary/Chicago International Airport (20 acres) do not call for construction within existing floodplains, then the Gary/Chicago International Airport would only request that the local inspector sign off that all floodplain requirements have been met for the project.

¹⁵ Federal Emergency Management Agency, Region V. Personal communication with Mary Jo Mullen. December 15, 2003.

In summary, it does not appear that the proposed project will impact floodplains. If any of the project is determined to be in the floodplain, the Gary/Chicago International Airport will request a floodplain analysis from IDNR for that area and will comply with all subsequent IDNR and local requirements to avoid and minimize floodplain impacts.